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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* ERIC CHAO XU

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Appeal 2009-010847  
Application 10/677,545  
Technology Center 1700

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Decided: January 28, 2010

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Before JEFFREY T. SMITH, LINDA M. GAUDETTE, and  
KAREN M. HASTINGS, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's  
decision finally rejecting claims 1-16, 18-23, 28-34, 36-38, and 42-52 (Final

Office Action, mailed February 20, 2008), the only claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).<sup>1</sup>

We AFFIRM.

#### STATEMENT OF THE CASE

Claim 1 is illustrative of the subject matter on appeal and is reproduced from the Claims Appendix to the Appeal Brief (“App. Br.”):

1. An alkaline peroxide mechanical pulping process comprising the steps of:

feeding a lignocellulosic material into a first press;

pressing the lignocellulosic materials;

discharging the lignocellulosic material from the first press;

impregnating the lignocellulosic material discharged from the first press with a first sodium hydroxide alkaline peroxide pretreatment solution and maintaining the impregnation for a first reaction time;

feeding the impregnated lignocellulosic material to a refiner having an inlet and a rotating disc within a superatmosphere casing;

refining the impregnated lignocellulose material to form a primary pulp having a temperature of at least about 80C;

delivering a stream of primary pulp from the superatmospheric casing to a blow line while the primary pulp temperature is at least about 80C;

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<sup>1</sup> In rendering this decision, we have considered Appellant's Brief dated October 24, 2008 and the Reply Brief dated April 2, 2009. An oral hearing was held on January 13, 2010.

adding a sodium hydroxide alkaline peroxide blow line solution to the stream of primary pulp in the blow line while the primary pulp temperature is at least about 80C;

mixing the blow line solution and the stream of primary pulp to form a reaction mixture in the blow line;

discharging the reaction mixture having a temperature of it least about 80C into a retention vessel;

retaining the reaction mixture in the retention vessel to produce a bleached material.

Appellant appeals the following rejections:

Claims 1-11, 18-23, 28, 29, 36-38, and 42-52 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Haynes, U.S. 6,743,332 B2, issued June 1, 2004, Cannell (“The Future of BCTMP”, Pulp and Paper, May 2000) and Prusas, U.S. 4,486,267, issued December 4, 1984.

Claims 12-16 and 30-34 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Haynes, Cannell, Prusas, and Textor, U.S. 3,023,140, issued February 27, 1962, Sandstrom, U.S. 4,270,976, issued June 2, 1981, and Xu<sup>2</sup>.

Appellant has not presented separate arguments for claims 3, 4, 5, 7-16, 19, 23, 29, 30-34, 36, 37, 38, and 43-52. (*See* App. Br. generally). Thus, in deciding this appeal, we will initially limit our discussion to independent claims 1, 18, 21, 36, and 42.

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<sup>2</sup> “Chemical Treatment in Mechanical Pulping-Part 3; Paul Yield and Chemical Pretreatment”, 1998 Pulping Conference, TAPPI Proceedings, pp. 391-402.

## ISSUE

The following issue is presented for our review:

Has Appellant shown reversible error in the Examiner's determination that it would have been obvious to one having ordinary skill in the art to perform a chemi-thermomechanical pulping process employing a two-stage chemical treatment wherein lignocellulosic materials are first pretreated with alkaline peroxide and then alkaline peroxide is subsequently added immediately before or at the refiner as described in independent claims 1, 18, 21, 36, and 42? We answer this question in the negative.

## FINDINGS OF FACT ("FF")

1. Appellant acknowledges that it was known by persons of ordinary skill in the art to apply alkaline peroxide to lignocellulosic material prior to or during refining. Appellant specifically states in the Specification:

In a very broad sense, alkaline peroxide refiner mechanical pulping is a type of pulping process where hydrogen peroxide and alkali in various forms, together with various amounts of different peroxide stabilizers, are applied to the lignocellulosic materials before or during defiberization and fibrillation in a refiner. In the early stage of development of this type of pulping process, two basic concepts were tried. One was to apply alkaline peroxide treatment on chips, to allow the bleaching reactions to complete or to approach completion before refining. The other basic concept was to apply all the alkaline peroxide at the refiner, either with no pretreatment or with stabilizers or other alkaline pretreatment prior to the alkaline peroxide application at the refiner. (Spec. 2).

2. The Examiner found that Prusas describes the pretreatment steps of the presently claimed invention. The Examiner found that Prusas differs from the claimed invention by not describing adding alkaline peroxide (AP) to the refiner. (Ans. 3). Prusas discloses the chemi-thermomechanical process (CTMP) is a two-stage chemical treatment performed prior to refining. (Col. 4, ll. 63-68).

3. The Examiner found that Cannell describes the use of alkali peroxide (AP) pretreatment steps in CTMP and post-refining bleaching steps. (Ans. 6; Cannell, Fig. 2).

4. The Examiner found that Haynes teaches AP introduction of an AP solution to a lignocellulosic material in a refiner pretreatment step and in a post refiner blow line injection step. (Ans. 4). Haynes discloses it is known in CTMP that the lignocellulosic material (wood chips) are first pretreated with sodium hydroxide and with hydrogen peroxide under elevated temperature and pressure prior to refining. (Haynes, 1, ll. 51-58). Haynes discloses in brightening processes it is conventional to utilize an oxidizing agent, such as hydrogen peroxide, with an alkali such as sodium hydroxide. (Haynes, 2, ll. 51-58). Haynes discloses alkali buffer solution suitable for peroxide bleaching at high temperatures can include a suitable quantity of sodium hydroxide. (Haynes, paragraph bridging 4 and 5).

5. Haynes teaches in the refining process AP solution is introduced at various points in the process. (Haynes, 12, ll. 45-53). Specifically Haynes states:

Referring again to FIG. 2, a plurality of chemical addition points 260, 261, 262, and 263 are shown. A first chemical addition point 260, 261, and 263 can be before or at the primary refiner and a second chemical

addition point 262 can be at a location which is interstage of the first 216 and second 222 refiners including blocks 218, 258, 226, 230, and all lines connected to such blocks. As used herein, when referring to "chemical addition at or in the primary refiner" means any block prior to or including the primary refiner 216 in FIG. 2 and prior to or including the blocks 324 and 326 in FIG. 3. According to the invention of providing methods for bleaching mechanical pulps, the bleaching liquor can be introduced in the first stage refiner 216 at 260 or at the interstage section between the first refiner 216 and the second refiner 222 at 262. Alternatively, one or a plurality of components of the bleaching liquor can be introduced at the first stage refiner 216 or preceding blocks and one or a plurality of components of the bleaching liquor can be introduced at the interstage section 224 or in any combination thereof. It should be pointed out that the interstage addition point can be at any vessel or line from the exit of the first stage refiner 216 to the entrance to the second stage refiner 222, including the units 218, 258, 226, 230 and the lines 224, 246, 262, 238, 240 and 266.

Haynes, 12, ll. 40-63.

6. Appellant has not disputed that Prusas discloses pretreatment steps that correspond to the claimed invention. (*See* Briefs generally). Appellant also has not disputed that Haynes teaches that it was known to introduce an AP solution to a lignocellulosic material at varying points in the refining process. (*See* Briefs generally). In fact, Appellant acknowledges that Haynes discloses the bleaching liquor can be introduced at various points in the refining process. (App. Br. 15)

## PRINCIPLES OF LAW

Appellant has the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)). Therefore, we look to Appellant's Brief to show error in the proffered *prima facie* case. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

A claimed invention is unpatentable if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). The question to be asked is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417.

“[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.” *In re Preda*, 401 F.2d 825, 826 (CCPA 1968).

Altering a position of a component in a device does not render the device patentable. *See In re Japikse*, 181 F.2d 1019, 1022-23 (CCPA 1950) (specific positioning of a starting switch of a hydraulic power press held unpatentable because shifting the position of the starting switch would not



have modified the operation of the device); *In re Kuhle*, 526 F.2d 553, 555 (CCPA 1975) (particular placement of a contact in a conductivity measuring device is an obvious matter of design choice).

#### ANALYSIS

Appellant has not shown reversible error in the Examiner's determination that it would have been obvious to one having ordinary skill in the art to perform a chemi-thermomechanical pulping process comprising adding alkali peroxide solution during pretreatment and immediately before and during the refining process. The Examiner cited Cannell and Prusas for describing it was known to add AP during pretreatment processes in CMTP. The Examiner cited Prusas for describing the specific pretreatment steps of the claimed invention. Appellant has not specifically identified the pretreatment steps that are not disclosed by Prusas. The Examiner cited Haynes for describing the introduction of an AP solution at various points during the refining process. Appellant has not disputed that it was known by persons of ordinary skill in the art to introduce an AP at various points during the refining process. (FF 6). A person of ordinary skill in the art would have reasonably expected that alkali peroxide could have been added during pretreatment and during the refining process. Appellant's invention of claim 1 is merely a predictable variation (of the location of the addition of alkaline peroxide) which yields predictable results and would have been obvious to one of ordinary skill. *See KSR, supra*. Appellant acknowledges that the field of the invention is crowded with many practitioners attempting to improve upon the

pretreatment, refining, and post refining stages of an AP mechanical pulping processes. (App. Br. 12).

Appellant's arguments regarding the absence of a nexus among the references (App. Br.13-14) are not persuasive. As set forth above, (FF 1-5), the person of ordinary skill in the art would have reasonably expected that AP could have been added during the lignocellulose material pre-treatment process or during the refining process for achieving optimal refining (softening and bleaching) of lignocellulose material.

Appellant's arguments regarding claims 2 and 22 (App. Br. 17 and 19) are not persuasive. Appellant has not specifically identified the error in the Examiner's reliance on the Prusas reference for rendering the subject matter unpatentable. A person of ordinary skill in the art would have reasonably expected that the pretreatment steps described by Prusas would have been suitable for use as the pretreatment in the Haynes process. Appellant has not provided an explanation as to why the pretreatment stages of Prusas would have been incompatible with the process of Haynes.

Appellant's arguments regarding claims 6, 20, and 21 (App. Br. 18-19) are not persuasive for the reasons set forth with respect to claim 1 above. Appellant's arguments pertain to the location of a blow valve for injection of the AP solution to the refiner. Appellant has not asserted that the use of a blow valve for the claimed purpose was unknown to persons of ordinary skill in the art. A person of ordinary skill in the art would have sufficient skill to select the appropriate location for the addition of components to our refiner.

Appellant's arguments regarding claims 18, 28, and 36 (App. Br. 18-20) are not persuasive. Appellant's arguments are not directed to the Haynes reference. The Examiner relies upon Haynes for describing the use of elevated temperature and pressure in the refining process. A person of ordinary skill in the art would have sufficient skill to select the appropriate temperature and pressure for the refining process.

Appellant's argument regarding claim 42 (App. Br. 20) are not persuasive for the reasons set forth with respect to claim 1 above. Appellant's arguments pertain to the location of a blow valve for transferring pulp in various stages of the refining process. Appellant has not disputed that the use of a blow valve for the claimed purpose was known to persons of ordinary skill in the art. A person of ordinary skill in the art would have recognized the suitable conditions for transferring pulp from the various stages during a refining process.

In addition to the Haynes, Cannell, and Prusas references, in rejecting the subject matter of claims 12-16 and 30-34, the Examiner relies upon the teachings of Textor, Sandstrom, and Xu. Appellant has not specifically addressed the Examiner's reliance upon the Textor, Sandstrom, and Xu references. Rather, Appellant contends that these claims are allowable for the reasons presented in response the rejection of claims 2 and 22. (App. Br. 22-23). Consequently, these rejections are maintained for the reasons set forth above.

Appellant has not directed us to evidence of secondary considerations such as unexpected results to support a conclusion of nonobviousness.

Under these circumstance, we cannot conclude that the Appellant has established error in the Examiner's determination that the appealed subject

matter is obvious under 35 U.S.C. § 103. Therefore, the rejections of claims 1-16, 18-23, 28-34, 36-38, and 42-52 under § 103 are affirmed.

Accordingly, we affirm the rejections under 35 U.S.C. § 103(a) of claims 1-11, 18-23, 28, 29, 36-38, and 42-52 over Haynes, Cannell, and Prusas; claims 12-16 and 30-34 over Haynes, Cannell, Prusas, Textor, Sandstrom, Xu, and Sabourin.

#### CONCLUSION

The decision of the Examiner rejecting claims 1-16, 18-23, 28-34, 36-38, and 42-52 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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